BioMap and Living Waters

Guiding Land Conservation for Biodiversity in Massachusetts

Core Habitats of Worthington

This report and associated map provide information about important sites for biodiversity conservation in your area.

This information is intended for conservation planning, and is not intended for use in state regulations.

Produced by:

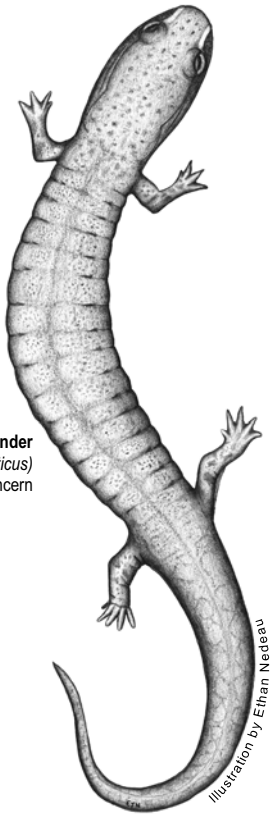
Natural Heritage & Endangered Species Program
Massachusetts Division of Fisheries and Wildlife
Executive Office of Environmental Affairs
Commonwealth of Massachusetts

Produced in 2004

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

Table of Contents

* Depending on the location of Core Habitats, your city or town may not have all of these sections.



Spring Salamander
(Gyrinophilus porphyriticus)
Species of Special Concern

Funding for this project was made available by the Executive Office of Environmental Affairs, contributions to the Natural Heritage & Endangered Species Fund, and through the State Wildlife Grants Program of the US Fish & Wildlife Service.

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

For more information on rare species and natural communities, please see our fact sheets online at ***www.nhesp.org***

BioMap and Living Waters:
Guiding Land Conservation for Biodiversity in Massachusetts

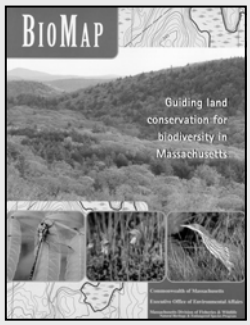
Introduction

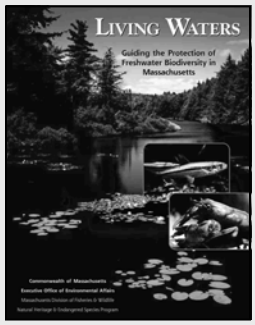
In this report, the Natural Heritage & Endangered Species Program provides you with site-specific biodiversity information for your area. Protecting our biodiversity today will help ensure the full variety of species and natural communities that comprise our native flora and fauna will persist for generatons to come.

The information in this report is the result of two statewide biodiversity conservation planning projects, ***BioMap*** and ***Living Waters***. The goal of the BioMap project, completed in 2001, was to identify and delineate the most important areas for the long-term viability of terrestrial, wetland, and estuarine elements of biodiversity in Massachusetts. The goal of the Living Waters project, completed in 2003, was to identify and delineate the rivers, streams, lakes, and ponds that are important for freshwater biodiversity in the Commonwealth. These two conservation plans are based on documented observations of rare species, natural communities, and exemplary habitats.

What is a Core Habitat?

Both BioMap and Living Waters delineate ***Core Habitats*** that identify the most critical sites for biodiversity conservation across the state. Core Habitats represent habitat for the state's most viable rare plant and animal populations and include exemplary natural communities and aquatic habitats. Core Habitats represent a wide diversity of rare species and natural communities (see Table 1), and these areas are also thought to contain virtually all of the other described species in Massachusetts. Statewide, BioMap Core Habitats encompass 1,380,000 acres of uplands and wetlands, and Living Waters identifies 429 Core Habitats in rivers, streams, lakes, and ponds.





Get your copy of the ***BioMap*** and ***Living Waters*** reports! Contact Natural Heritage at 508-792-7270, Ext. 200 or email natural.heritage@state.ma.us. Posters and detailed technical reports are also available.

Core Habitats and Land Conservation

One of the most effective ways to protect biodiversity for future generations is to protect Core Habitats from adverse human impacts through land conservation. For Living Waters Core Habitats, protection efforts should focus on the ***riparian areas***, the areas of land adjacent to water bodies. A naturally vegetated buffer that extends 330 feet (100 meters) from the water's edge helps to maintain cooler water temperature and to maintain the nutrients, energy, and natural flow of water needed by freshwater species.

In Support of Core Habitats

To further ensure the protection of Core Habitats and Massachusetts' biodiversity in the long-term, the BioMap and Living Waters projects identify two additional areas that help support Core Habitats.

In BioMap, areas shown as ***Supporting Natural Landscape*** provide buffers around the Core Habitats, connectivity between Core Habitats, sufficient space for ecosystems to function, and contiguous undeveloped habitat for common species. Supporting Natural Landscape was

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

generated using a Geographic Information Systems (GIS) model, and its exact boundaries are less important than the general areas that it identifies. Supporting Natural Landscape represents potential land protection priorities once Core Habitat protection has been addressed.

In Living Waters, ***Critical Supporting Watersheds*** highlight the immediate portion of the watershed that sustains, or possibly degrades, each freshwater Core Habitat. These areas were also identified using a GIS model. Critical Supporting Watersheds represent developed and undeveloped lands, and can be quite large. Critical Supporting Watersheds can be helpful in land-use planning, and while they are not shown on these maps, they can be viewed in the Living Waters report or downloaded from www.mass.gov/mgis.

Understanding Core Habitat Species, Community, and Habitat Lists

What's in the List?

Included in this report is a list of the species, natural communities, and/or aquatic habitats for each Core Habitat in your city or town. The lists are organized by Core Habitat number.

For the larger Core Habitats that span more than one town, the species and community lists refer to the entire Core Habitat, not just the portion that falls within your city or town. For a list of all the state-listed rare species within your city or town's boundary, whether or not they are in Core Habitat, please see the town rare species lists available at www.nhesp.org.

The list of species and communities within a Core Habitat contains only the species and natural communities that were explicitly included in a given BioMap or Living Waters Core Habitat. Other rare species or examples of other natural communities may fall within the Core Habitat, but for various reasons are not included in the list. For instance, there are a few rare species that are omitted from the list or summary because of their particular sensitivity to the threat of collection. Likewise, the content of many very small Core Habitats are not described in this report or list, often because they contain a single location of a rare plant

Table 1. The number of rare species and types of natural communities explicitly included in the BioMap and Living Waters conservation plans, relative to the total number of native species statewide.

BioMap

	Species and Verified Natural Community Types	
Biodiversity Group	**Included in BioMap**	**Total Statewide**
Vascular Plants	246	1,538
Birds	21	221 breeding species
Reptiles	11	25
Amphibians	6	21
Mammals	4	85
Moths and Butterflies	52	An estimated 2,500 to 3,000
Damselflies and Dragonflies	25	An estimated 165
Beetles	10	An estimated 2,500 to 4,000
Natural Communities	92	> 105 community types

Living Waters

	Species	
Biodiversity Group	**Included in Living Waters**	**Total Statewide**
Aquatic Vascular Plants	23	114
Fishes	11	57
Mussels	7	12
Aquatic Invertebrates	23	An estimated > 2500

species. Some Core Habitats were created for suites of common species, such as forest birds, which are particularly threatened by habitat fragmentation. In these cases, the individual common species are not listed.

What does 'Status' mean?

The Division of Fisheries and Wildlife determines a status category for each rare species listed under the Massachusetts Endangered Species Act, M.G.L. c.131A, and its implementing regulations, 321 CMR 10.00. Rare species are categorized as Endangered, Threatened, or of Special Concern according to the following:

- ***Endangered*** species are in danger of extinction throughout all or a significant portion of their range or are in danger of extirpation from Massachusetts.
- ***Threatened*** species are likely to become Endangered in Massachusetts in the foreseeable future throughout all or a significant portion of their range.
- ***Special Concern*** species have suffered a decline that could threaten the species if allowed to continue unchecked or occur in such small numbers or with such restricted distribution or specialized habitat requirements that they could easily become Threatened in Massachusetts.

In addition, the Natural Heritage & Endangered Species Program maintains an unofficial ***watch list*** of plants that are tracked due to potential conservation interest or concern, but are not regulated under the Massachusetts Endangered Species Act or other laws or regulations. Likewise, described natural communities are not regulated any laws or regulations, but they can help to identify ecologically important areas that are worthy of protection. The status of natural communities reflects the documented number and acreages of each community type in the state:

- ***Critically Imperiled*** communities typically have 5 or fewer documented sites or have very few remaining acres in the state.
- ***Imperiled*** communities typically have 6-20 sites or few remaining acres in the state.
- ***Vulnerable*** communities typically have 21-100 sites or limited acreage across the state.
- ***Secure*** communities typically have over 100 sites or abundant acreage across the state; however excellent examples are identified as Core Habitat to ensure continued protection.

Legal Protection of Biodiversity

BioMap and Living Waters present a powerful vision of what Massachusetts would look like with full protection of the land that supports most of our biodiversity. To create this vision, some populations of state-listed rare species were deemed more likely to survive over the long-term than others.

Regardless of their potential viability, all sites of state-listed species have full legal protection under the Massachusetts Endangered Species Act (M.G.L. c.131A) and its implementing regulations (321 CMR 10.00). Habitat of state-listed wildlife is also protected under the Wetlands Protection Act Regulations (310 CMR 10.37 and 10.59). The ***Massachusetts Natural Heritage Atlas*** shows **Priority Habitats**, which are used for regulation under the Massachusetts Endangered Species Act and Massachusetts Environmental Policy Act (M.G.L. c.30) and **Estimated Habitats**, which are used for regulation of rare wildlife habitat under the Wetlands Protection Act. For more information on rare species regulations, see the *Massachusetts Natural Heritage Atlas*, available from the Natural Heritage & Endangered Species Program in book and CD formats.

BioMap and Living Waters are conservation planning tools and do not, in any way, supplant the Estimated and Priority Habitat Maps which have regulatory significance. Unless and until the combined BioMap and Living Waters vision is fully realized, we must continue to protect all populations of our state-listed species and their habitats through environmental regulation.

Natural Heritage & Endangered Species Program

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

Understanding Core Habitat Summaries

Following the BioMap and Living Waters Core Habitat species and community lists, there is a descriptive summary of each Core Habitat that occurs in your city or town. This summary highlights some of the outstanding characteristics of each Core Habitat, and will help you learn more about your city or town's biodiversity. You can find out more information about many of these species and natural communities by looking at specific ***fact sheets*** at www.nhesp.org.

Next Steps

BioMap and Living Waters were created in part to help cities and towns prioritize their land protection efforts. While there are many reasons to conserve land – drinking water protection, recreation, agriculture, aesthetics, and others – BioMap and Living Waters Core Habitats are especially helpful to municipalities seeking to protect the rare species, natural communities, and overall biodiversity within their boundaries. Please use this report and map along with the rare species and community fact sheets to appreciate and understand the biological treasures in your city or town.

Protecting Larger Core Habitats

Core Habitats vary considerably in size. For example, the average BioMap Core Habitat is 800 acres, but Core Habitats can range from less than 10 acres to greater than 100,000 acres. These larger areas reflect the amount of land needed by some animal species for breeding, feeding, nesting, overwintering, and long-term survival. Protecting areas of this size can be very challenging, and requires developing partnerships with neighboring towns.

Prioritizing the protection of certain areas within larger Core Habitats can be accomplished through further consultation with Natural Heritage Program biologists, and through additional field research to identify the most important areas of the Core Habitat.

Additional Information

If you have any questions about this report, or if you need help protecting land for biodiversity in your community, the Natural Heritage & Endangered Species Program staff looks forward to working with you.

Contact the Natural Heritage & Endangered Species Program:

by Phone *508-792-7270, Ext. 200*

by Fax: *508-792-7821*

by Email: *natural.heritage@state.ma.us*.

by Mail: *North Drive*
Westborough, MA 01581

The GIS datalayers of BioMap and Living Waters Core Habitats are available for download from MassGIS: www.mass.gov/mgis

Check out www.nhesp.org for information on:

- Rare species in your town
- Rare species fact sheets
- BioMap and Living Waters projects
- Natural Heritage publications, including:
  - Field guides
  - Natural Heritage Atlas, and more!

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

BioMap: Species and Natural Communities

Worthington

Core Habitat BM656

Invertebrates

Common Name	Scientific Name	Status
Ocellated Darner	*Boyeria grafiana*	Special Concern

Core Habitat BM665

Natural Communities

Common Name	Scientific Name	Status
Riverside Seep		Imperiled

Plants

Common Name	Scientific Name	Status
Barren Strawberry	*Waldsteinia fragarioides*	Special Concern
Muskflower	*Mimulus moschatus*	Endangered
Spurred Gentian	*Halenia deflexa*	Endangered

Invertebrates

Common Name	Scientific Name	Status
Riffle Snaketail	*Ophiogomphus carolus*	Threatened

Vertebrates

Common Name	Scientific Name	Status
Spring Salamander	*Gyrinophilus porphyriticus*	Special Concern

Core Habitat BM688

Plants

Common Name	Scientific Name	Status
Small Site for Rare Plant		

BioMap: Species and Natural Communities

Worthington

Core Habitat BM718

Vertebrates

Common Name	Scientific Name	Status
American Bittern	*Botaurus lentiginosus*	Endangered

Core Habitat BM744

Natural Communities

Common Name	Scientific Name	Status
Circumneutral Talus Forest/Woodland		Vulnerable
Hemlock-Hardwood Swamp		Secure
Hickory - Hop Hornbeam Forest/Woodland		Imperiled
High-Energy Riverbank		Vulnerable
High-Terrace Floodplain Forest		Imperiled
Northern Hardwoods - Hemlock - White Pine Forest		Secure
Rich, Mesic Forest Community		Vulnerable

Plants

Common Name	Scientific Name	Status
Foxtail Sedge	*Carex alopecoidea*	Threatened
Hitchcock's Sedge	*Carex hitchcockiana*	Special Concern
Muskflower	*Mimulus moschatus*	Endangered
Wild Senna	*Senna hebecarpa*	Endangered

Invertebrates

Common Name	Scientific Name	Status
Ocellated Darner	*Boyeria grafiana*	Special Concern
Ostrich Fern Borer Moth	*Papaipema sp. 2 near pterisii*	Special Concern
Riffle Snaketail	*Ophiogomphus carolus*	Threatened
Ski-Tailed Emerald	*Somatochlora elongata*	Special Concern

Twelve-Spotted Tiger Beetle	*Cicindela duodecimguttata*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
Four-toed Salamander	*Hemidactylium scutatum*	Special Concern
Water Shrew	*Sorex palustris*	Special Concern

Core Habitat BM750

Natural Communities

Common Name	Scientific Name	Status
High-Energy Riverbank		Vulnerable
High-Terrace Floodplain Forest		Imperiled
Northern Hardwoods - Hemlock - White Pine Forest		Secure
Shallow Emergent Marsh		Secure

Invertebrates

Common Name	Scientific Name	Status
Beaver Pond Clubtail	*Gomphus borealis*	Special Concern
Harpoon Clubtail	*Gomphus descriptus*	Endangered
Ocellated Darner	*Boyeria grafiana*	Special Concern
Ostrich Fern Borer Moth	*Papaipema sp. 2 near pterisii*	Special Concern
Rapids Clubtail	*Gomphus quadricolor*	Threatened
Riffle Snaketail	*Ophiogomphus carolus*	Threatened
Tule Bluet	*Enallagma carunculatum*	Special Concern
Twelve-Spotted Tiger Beetle	*Cicindela duodecimguttata*	Special Concern

Vertebrates

Common Name	Scientific Name	Status
American Bittern	*Botaurus lentiginosus*	Endangered
Jefferson Salamander	*Ambystoma jeffersonianum*	Special Concern

BioMap: Core Habitat Summaries

Worthington

Core Habitat BM656

Invertebrates

This Core Habitat includes a 3-km stretch of Trout Brook in Worthington and Peru that is habitat for the rare Ocellated Darner dragonfly. The surrounding landscape is both forested and unfragmented, which protects the river from pollution. This Core Habitat is located less than 10 km from other habitat for the Ocellated Darner within Core Habitats in Cummington and Chesterfield, which probably allows for the dispersal of individual dragonflies between these three areas. While the northwestern half of this Core Habitat is within the Peru Wildlife Management Area, the remaining half appears to be unprotected.

Core Habitat BM665

This Core Habitat encompasses a section of the Westfield River, its tributaries, and adjacent forests. Highlights include a diverse Riverside Seep community, the presence of two Endangered plant species, and high-gradient streams that support Spring Salamanders. This Core Habitat also supports rare species of dragonflies, including the Riffle Snaketail that was first documented here over 100 years ago.

Natural Communities

This Core Habitat contains a moderate-sized Riverside Seep along a narrow section of riverbank on the Westfield River. Riverside Seeps are a mixed herbaceous community that occurs at the base of steep riverbanks where groundwater seeps out of the bottom of the upland slope. This enrichment leads to high species diversity. Although not well-buffered by forested upland, the seep here does contain good species diversity.

Plants

The only current Massachusetts population of the Endangered Spurred Gentian, a slender perennial with purplish-green flowers, grows along cool, mossy shores of the Westfield River. Another Endangered plant species, Muskflower, grows in springy areas and seeps around the river.

Invertebrates

In its northeast portion, this Core Habitat includes a 5-km stretch of the Westfield River, its tributaries, and surrounding forested uplands that are habitat for rare species of dragonflies such as the Riffle Snaketail, which has been known to inhabit this stretch of the Westfield River for well over 100 years! This Core Habitat is within dispersal distance of Core Habitats in Cummington, which allows for movement of Riffle Snaketails between these areas. Most of this Core Habitat is within the protected land of the Gilbert A. Bliss State Forest and the Division of Fisheries & Wildlife's Westfield River Access Area. Nevertheless, conservation of remaining areas of unprotected land within this Core Habitat is desirable to increase the amount of contiguous protected habitat and to help ensure the long-term viability of rare species inhabiting the area.

Vertebrates

This Core Habitat contains over seven miles of connected, high-gradient river and brook habitats that support populations of Spring Salamanders along the Westfield River and Tower, Oak Hill, and Jewel Brooks in Chesterfield. Over half of this Core Habitat is already protected as conservation land within Chesterfield State Forest.

Core Habitat BM718

Vertebrates

This Core Habitat encompasses a small, deepwater cattail marsh at the south end of a pond, along the north side of Old Post Road in Worthington. This wetland provides habitat for American Bitterns, Marsh Wrens, and other wetland birds. Conservation efforts should seek to protect both the wetland and surrounding uplands to buffer against noise, visual disturbance, and changes to current hydrologic conditions.

Core Habitat BM744

This Core Habitat includes portions of the Westfield and Little Rivers, as well as their surrounding forest uplands, which together support a diversity of plants and animals. Included are high-quality habitats for rare species of moths, dragonflies, tiger beetles, and plants, and also for Water Shrews and Four-toed Salamanders. This Core Habitat contains several patches of Rich, Mesic Forest within which the moist and nutrient-rich soils support a variety of springtime plants. Much of this Core Habitat is protected as conservation land.

Natural Communities

This Core Habitat contains numerous upland forest communities of good quality, including a series of Rich, Mesic Forest patches occurring along several miles of the Westfield River. Rich, Mesic Forests are a variant of northern hardwood forests dominated by Sugar Maple with a diverse herbaceous layer and many spring ephemerals, unusual plants that appear only in spring, in a moist, nutrient-rich environment. Here the patches are well-buffered by a large Northern Hardwoods-Hemlock-White Pine Forest that occupies much of the rolling terrain within this Core Habitat.

Plants

Two rare species of sedge inhabit areas of this Core Habitat, as does the Endangered Wild Senna, which grows in only two places in all of Massachusetts.

Invertebrates

This Core Habitat includes an 11-km stretch of the East Branch of the Westfield River and surrounding forested, unfragmented uplands in Huntington and Chesterfield that are critical habitat for many rare insect species. These species include river dragonflies such as the Ocellated Darner, Riffle Snaketail, and Ski-tailed Emerald; the Twelve-spotted Tiger Beetle, which inhabits the riverbanks; and the Ostrich Fern Borer moth, an inhabitant of the floodplain forest along the river. Many of these species also inhabit another Core Habitat, located less than 5 km to the southwest along the Middle Branch of the Westfield River, which probably allows for occasional dispersal between these two areas. Much of this Core Habitat is within the Knightville Dam & Reservation and the Gilbert A. Bliss State Forest; conservation of the remaining areas of unprotected land within this Core Habitat is desirable to increase the amount of contiguous protected habitat and to help ensure the long-term viability of rare species inhabiting the area. Unusually large or frequent hydrologic changes resulting from the Knightville Dam may have adverse effects on rare invertebrate species within this Core Habitat.

Vertebrates

This Core Habitat contains habitat for Water Shrews along the Westfield River within the Knightville Wildlife Management Area. Habitat for Four-toed Salamanders is also present here in sphagnum pools in small forested wetlands.

Core Habitat BM750

This Core Habitat includes a long stretch of the Middle Branch of the Westfield River and surrounding upland forests. This area provides significant habitat for rare insect species, including dragonflies such as the Endangered Harpoon Clubtail. The Core Habitat also contains wetland habitats for American Bitterns, upland habitat for Jefferson Salamanders, and excellent riverbank and forested natural communities.

Natural Communities

This Core Habitat contains a long stretch of well-buffered, high-quality High-Energy Riverbank vegetation with good habitat and species diversity. High-Energy Riverbank communities are sparse, open graminoid communities found on cobble and sand deposits along fast-flowing rivers that experience severe flooding and ice scour. Much of the remainder of this Core Habitat is an extensive high-quality Northern Hardwoods-Hemlock-White Pine Forest with excellent habitat diversity. Northern Hardwoods-Hemlock-White Pine Forests have a mix of evergreen and deciduous trees, with a closed, full canopy, and sparse shrub and herbaceous layers. They commonly occur on north facing slopes and ravines with moderately acidic soils.

BioMap: Core Habitat Summaries

Worthington

Invertebrates

This Core Habitat includes a 13-km stretch of the Middle Branch of the Westfield River and surrounding forested, unfragmented uplands that are critical habitat for many rare insect species. These species include river dragonflies such as the Harpoon Clubtail, Rapids Clubtail, and Riffle Snaketail; the Twelve-spotted Tiger Beetle, which inhabits the riverbanks; and the Ostrich Fern Borer moth, an inhabitant of the floodplain forest along the river. Many of these species also inhabit another Core Habitat located less than 5 km to the northeast, along the East Branch of the Westfield River. This proximity probably allows for occasional dispersal between these two areas. While a portion of this Core Habitat is within the Fox Den Wildlife Management Area and a few other relatively small tracts of conservation land, the majority of the area appears to be unprotected; conservation of the remaining areas of unprotected land within this Core Habitat is desirable to increase the amount of contiguous protected habitat and to help ensure the long-term viability of rare species inhabiting the area. Unusually large or frequent hydrologic changes resulting from the Littleville Dam may have adverse effects on rare invertebrate species within this Core Habitat.

Vertebrates

This Core Habitat encompasses wetland habitat for the American Bittern, a rare marsh bird. The area also contains vernal pools surrounded by upland forest that support a population of Jefferson Salamanders.

Living Waters: Species and Habitats

Worthington

Core Habitat LW015

Exemplary Habitats

Common Name	Scientific Name	Status
Invertebrate Habitat		----------

Core Habitat LW355

Exemplary Habitats

Common Name	Scientific Name	Status
Fish Habitat		----------
Invertebrate Habitat		----------

Fishes

Common Name	Scientific Name	Status
Bridle Shiner	*Notropis bifrenatus*	Special Concern
Lake Chub	*Couesius plumbeus*	Endangered
Longnose Sucker	*Catostomus catostomus*	Special Concern

Core Habitat LW429

Exemplary Habitats

Common Name	Scientific Name	Status
Invertebrate Habitat		----------

Invertebrates

Common Name	Scientific Name	Status
Creeper	*Strophitus undulatus*	Special Concern

Living Waters: Core Habitat Summaries

Worthington

Core Habitat LW015

This Core Habitat in Fuller Brook flows out of Peru State Forest in Worthington and toward the Middle Branch of the Westfield River. The crystal clear water flows swiftly over and around the brook's boulders and cobbles. The brook supports a healthy community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The presence of this invertebrate community indicates the stream habitats here are relatively free of the impacts of development. Forested stream banks help maintain the high-quality habitat by shading the water to keep it cool, by providing a natural energy source to the stream ecosystem in the form of leaves and sticks, and by controlling the runoff of sediments, excess nutrients, and water.

Core Habitat LW355

This Core Habitat stretches more than 30 miles, encompassing the East Branch of the Westfield River and many of its tributaries from Huntington to Savoy. These freshwater habitats are among the best in the state for fishes and aquatic insects.

The fish communities here are indicative of cold, clean, rocky habitats with flowing waters. For example, a section of the Westfield River in Chesterfield supports a community of Blacknose Dace, Common Shiner, Longnose Dace, Slimy Sculpin, White Sucker, and Lake Chub. These fishes require clean cobble and gravel substrates for spawning and are dependent on fast flowing waters. In a section of Westfield Brook in Cummington, the fish community reflects a relatively small, cold, moderately flowing stream with clean rocky substrates. The fish community it supports is diverse; it consists of Blacknose Dace, Creek Chub, Common Shiner, Brook Trout, Longnose Dace, Slimy Sculpin, White Sucker, Lake Chub, and Bridle Shiner.

The state-Endangered Lake Chub can be found along this Core Habitat, which is one of only two sites in the state that supports this species. This fish requires moderate- to fast-flowing, clear, cold streams with gravel and rubble substrates. In the spring, this species may move large distances to spawn (breed). Excess sediments can degrade the clean gravel needed for spawning and proper egg development. Increases in sediments cloud the water and impair this species' visual feeding.

Another rare fish, the Longnose Sucker, is found in the East Branch of the Westfield River and its tributaries in the Cummington-Windsor area. This fish Species of Special Concern is restricted to the western watersheds of Massachusetts, where it is found in cold, clean, oxygen-rich streams with gravel bottoms. The Longnose Sucker may also migrate many miles to reach its spawning grounds. The eggs are released over the gravel bottom, making them susceptible to excess sedimentation, flow alterations, and increases in water temperature. These habitat degradations can be particularly detrimental to the reproductive success of this slow-growing fish that does not reach maturity until 5 to 7 years of age.

A third rare fish species, the Bridle Shiner, is found in a section of Westfield Brook in Cummington. This is the only known population of Bridle Shiner in the Westfield Watershed. This fish Species of Special Concern has a small range from southern New England to South Carolina, and has been declining or extirpated in much of the region. The Bridle Shiner is typically found in well-vegetated, quiet waters. It feeds on small aquatic insects and other

invertebrates, and is an important part of the freshwater ecosystem as prey for larger fishes.

This Core Habitat also provides excellent habitat for aquatic invertebrates. The area includes habitat for several species of state-listed dragonflies and damselflies, from the mainstem of the river up to the small, acidic headwater streams. The Little River also supports a healthy community of the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. The naturally vegetated streambanks help maintain the habitat quality, shading the water to keep it cool and controlling the runoff of sediments, excess nutrients, and water. Sections of this Core Habitat are already protected, but protecting the remaining riparian areas along the Westfield River and its tributaries will aid in maintaining the integrity of these excellent freshwater habitats.

Core Habitat LW429

The Middle Branch of the Westfield River, along with its tributaries, provide key habitat for aquatic insects and freshwater mussels. This Core Habitat includes habitat for several species of state-listed dragonflies and damselflies, from the river's mainstem up to the small, acidic, headwater streams. These aquatic insects are good indicators of ecosystem health, suggesting that this Core Habitat contains high-quality freshwater habitats for other underwater species as well.

For example, Kinne Brook, supports the more ecologically sensitive aquatic insects: mayflies, stoneflies, and caddisflies. This brook originates in Worthington, flows south into Chester through agricultural lands and forests, and joins the Middle Branch of the Westfield River. The forested stream banks help maintain the high-quality habitat by shading the water to keep it cool, by providing a natural energy source to the stream ecosystem in the form of leaves, needles, and sticks, and by controlling the runoff of sediments, excess nutrients, and water.

The short stretch of the Middle Branch of the Westfield River below the Littleville Dam supports a population of the freshwater mussel, known as the Creeper mussel. This species is found in the pockets of sand and gravel that collect between the more typical cobble and boulders found along the river bottom.

Protecting the remaining unprotected riparian areas along the Westfield River, as well as the land surrounding its tributaries will aid in maintaining the integrity of these excellent freshwater habitats.

Massachusetts Division of Fisheries and Wildlife
North Drive, Westborough, MA 01581
Tel: (508) 792-7270, Ext. 200 Fax: (508) 792-7821
http://www.nhesp.org

Help Save Endangered Wildlife!

Please contribute on your Massachusetts income tax form or directly to the

Natural Heritage &
Endangered Species Fund

To learn more about the Natural Heritage & Endangered Species Program and the Commonwealth's rare species, visit our web site at: www.nhesp.org.